



National Grid

STORM WATER POLLUTION PREVENTION PLAN Prepared for WACHUSETT NO. 47 SUBSTATION EXPANSION

Location

Wachusett No. 47 Substation
Temple Street
West Boylston, MA

Owner

New England Power Company
55 Bearfoot Road
Northborough, MA

Prepared by
National Grid USA Service Company
55 Bearfoot Road
Northborough, MA

December 20, 2003

TABLE OF CONTENTS

- 1.0 Introduction**
- 2.0 Construction Contact List**
- 3.0 Project Description**
 - 3.1 Site Location**
 - 3.2 Existing Site Conditions**
 - 3.3 Description of Proposed Work**
 - 3.4 Sequence of Construction Activities**
- 4.0 Storm Water Management Controls**
 - 4.1 Potential Impacts**
 - 4.2 Temporary and Permanent Erosion Control Practices**
- 5.0 Spill Prevention**
 - 5.1 Management of Spills and Releases**
 - 5.2 Refueling and Vehicle Lubrication**
- 6.0 Maintenance and Inspections**
 - 6.1 General**
 - 6.2 Inspection Frequency**
 - 6.3 Inspection Reporting**
- 7.0 Compliance with Federal, State and Local Regulations Other Permits**
 - 7.1 Endangered Species**
 - 7.2 Historic Places**
 - 7.3 Other Permits**
- 8.0 Plan Amendments**
- 9.0 Certifications**

ATTACHMENT A – CONSTRUCTION CONTACT LIST

ATTACHMENT B – EROSION CONTROL BMP'S

ATTACHMENT C – EROSION CONTROL PLANS

ATTACHMENT D – SAMPLE INSPECTION REPORT

ATTACHMENT E – CONSTRUCTION GENERAL PERMIT

ATTACHMENT F – AMENDMENTS TO THE SWPPP

STORM WATER POLLUTION PREVENTION PLAN

1.0 Introduction

National Grid USA Service Company (hereinafter National Grid) has prepared this Storm Water Pollution Prevention Plan (SWPPP) for construction activities associated with the expansion of the existing outdoor Wachusett No. 47 Substation located in West Boylston, Massachusetts.

This SWPPP was prepared for the project as part of the requirements for coverage under the Environmental Protection Agency's (EPA) Phase II Rules of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Large and Small Construction Activities in Massachusetts (MAR100000). For construction projects, the implementation of Phase II requires that operators of all common plans of development that disturb more than 1 acre will gain coverage under the Construction General Permit (CGP) by filing a Notice of Intent (NOI) form to the EPA, and by developing and complying with a SWPPP on-site.

The Contractor shall comply with the requirements of this SWPPP and shall perform his/her operations in strict conformance with the CGP. All permit conditions and requirements in this plan have been derived from the text of the CGP. A full version of the CGP can be found in Appendix B, as required.

National Grid will be considered the Owner/Operator of the project and will submit a completed NOI to EPA in conjunction with developing this SWPPP. Any subcontractor hired by National Grid to perform earth-disturbing activities will be required to sign on to the SWPPP.

The purpose of storm water management is to prevent erosion both on the construction site itself and on adjacent undisturbed areas, and to prevent sedimentation of natural watercourses and vegetated areas. This is generally accomplished through both stabilization and structural control practices. Storm water management also addresses pollution prevention using measures to reduce pollutants in storm water as well as using good housekeeping practices on the construction site.

The purpose of the SWPPP is to establish requirements and instructions for the management of construction-related storm water discharges. Best Management Practices (BMP's) are one of the major issues addressed by the SWPPP and they will be incorporated in order to mitigate for potential pollutants, sediments, and storm water peak flows, and to dissipate storm water velocities.

The SWPPP must meet the three major objectives of the CGP:

1. Identify all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site;
2. Describe practices to be used to reduce pollutants in storm water discharges from the construction site; and
3. Assure compliance with the terms and conditions of the CGP.

2.0 Construction Contact List

The construction site personnel contact list for this project is provided in Attachment A.

The duties of these personnel include the following:

- ◆ Implement the Storm Water Pollution Prevention Plan (SWPPP)
- ◆ Oversee maintenance practices identified as BMP's in the SWPPP
- ◆ Conduct or provide for inspection and monitoring activities
- ◆ Identify other potential pollutant sources and make sure that they are added to the plan
- ◆ Identify any amendments to the SWPPP necessitated by field conditions and make sure they are implemented
- ◆ Ensure that any design changes during construction are addressed in the SWPPP.

3.0 Project Description

3.1 Site Location

The Wachusett Substation No. 47, is located on a 14 +/- acre parcel off Temple Street (Route 140) in West Boylston, Massachusetts (Refer to Figure 1). This substation began serving central Massachusetts customers in the early 1970s. Its purpose is to convert power from the 115-kilovolt transmission lines to 69-kilovolt lines that feed local area substations. The site is generally bound by the railroad to the west, Temple Street to the south and woodlands and the Wachusett Reservoir to the north and east. Temple Street Substation is located directly across the street from the access drive to Wachusett Substation. The project site is located adjacent to an easement granted by the Department of Conservation and Recreation, Division of Watershed Protection (formerly known as the Metropolitan District Commission).

3.2 Existing Site Conditions

Most of the site is developed as a corridor for four high voltage overhead transmission lines. These lines run through and adjacent to the existing substation, which consists of a fenced in area of approximately feet by feet. Except for a section of the paved drive and a control house, the substation is pervious, consisting of a crushed stone surface treatment. In this area rainfall primarily infiltrates through the crushed stone. There are no stormwater management features currently in place. Stormwater runoff from the paved access road sheet flows unmitigated to the surrounding upland and wetland areas. The upland area immediately surrounding the substation and beneath the transmission lines consists of a previously graded and disturbed area supporting an assortment of grasses (i.e., switch grass) and scrub/shrub vegetation. A portion of the site that lies just east of the transmission lines is an undeveloped, wooded area.

Gates Brook, an unnamed intermittent stream, and associated Bordering Vegetated Wetlands (BVWs) are the main hydrologic features on or in close proximity to the project site. These hydrologic features are contiguous and tributary to the Wachusett Reservoir, a public water supply, and are therefore similarly designated as Outstanding Resource Waters (ORWs).

Based on the soil survey for the town of West Boylston, the majority of the site consists of excessively drained Hinckley soils, while the southeast portion of the site consists of moderately drained Sudbury soils. The soil survey rates the erosion hazard of these soils as slight to moderate because of their granular nature.

3.3 Description of Proposed Work

The proposed project includes the expansion of the existing substation to tap into the existing 345 kV transmission lines. In order to accommodate the expansion as described below, the substation area will be increased by approximately three acres. To avoid wetland impacts, a retaining wall will be constructed on the south side of the site adjacent to the IOO-series wetland. This retaining wall will consist of a soil reinforced wall with pre-cast masonry facing. The expanded substation will be fenced-in and an interior perimeter paved road will be constructed. The proposed substation yard will be surfaced with a 6 inch thick layer of 3/4 inch crushed stone. Within the fenced in yard, two new prefabricated buildings (345 kV GIS building and the 115 kV GIS and control building) are proposed that will house associated electrical equipment. Also in the yard various concrete foundations will be constructed to support electrical equipment and pole structures.

The substation expansion will require reconfiguration of the existing

transmission lines, requiring relocation or replacement of some of the transmission line structures outside of the fenced area. All the proposed 115 and 345 kV line structures will be steel with concrete foundations while the 69 kV structures will be guyed wood poles.

A sewer and water service lines will also be installed beneath the existing entrance driveway in order to support a new small sanitary facility at the site. These utility lines will connect to the existing lines located within Temple Street. In addition, drainage structures (i.e., deep sump catch basins and infiltration basin) will be installed to treat and infiltrate stormwater. Following installation of the sanitary lines and drainage structures the driveway will be repaved to include curbing.

To mitigate overall project-related stormwater runoff, the stormwater management plan has been designed in accordance with the DEP Stormwater Management Policy. The drainage analysis is provided in a separate report entitled "Stormwater Design Report – Wachusett Substation" dated December 20, 2003. Since the site is tributary to an Outstanding Resource Water (the Wachusett Reservoir, a public drinking water supply), the first inch of runoff must be treated. Runoff generated from the driveway will be treated by deep sump catch basins and an infiltration basin. Any overflow from the infiltration basin will be conveyed through a rip rap apron and vegetated swale and eventually to the 100-series BVW. Rooftop runoff from the two buildings will be conveyed to infiltration chambers designed to infiltrate the first inch of rainfall. Overflow from the chambers will be directed to the vegetated swale located along the northeast perimeter of the substation yard. This vegetated swale also functions to intercept runoff generated from the adjacent hillside in order to prevent runoff from entering the site. The swale redirects runoff towards the 100-series BVW. Rainfall falling on the crushed stone will infiltrate directly and no stormwater Best Management Practices are required or proposed.

3.4 Sequence of Construction Activities

Contingent upon approvals, the proposed work is expected to begin in the summer of 2004 and will take approximately 24 months to complete. The substation expansion will undertake a phased construction schedule in order to continue to supply electricity to the existing substation. The major tasks of each phase are outlined in Table 1.

TABLE 1
SEQUENCE OF CONSTRUCTION ACTIVITIES

<u>PHASE</u>	<u>MAJOR TASKS</u>
IA	<ol style="list-style-type: none"> 1. Brush hog area for limit of work fencing 2. Tree clearing 3. Chip brush and remove
IB	<ol style="list-style-type: none"> 1. Grade north and west portions of yard to rough grade elevation 2. Permanently stabilize slopes on east side of yard. 3. Install permanent fencing on west side of yard to enclose 115/69kV yard
IC	<ol style="list-style-type: none"> 1. Install foundations for 345kV A-frame structures 2. Install foundations for 345kV GIS building 3. Install 345kV A-frame structures 4. Install 345kV GIS building 5. Install foundations for permanent 345kV transmission line structures 6. Install permanent 345kV transmission line structures; relocate lines 314 & 343 7. Remove existing 345kV transmission line structures #119, 119A, 203 & 204
ID	<ol style="list-style-type: none"> 1. Install foundations for temporary 115kV transmission line structure 2. Install temporary 115kV transmission line structure; relocate lines 0141 & P142 3. Install foundations for 115kV GIS building and new control house 4. Install 115k V GIS building and new control house
IIA	<ol style="list-style-type: none"> 1. Build retaining wall 2. Complete grading in middle of main yard to rough grade elevation 3. Extend south portion of yard for 115/69kV transformers 4. Permanently stabilize all slopes, swales and drainage 5. Install permanent fencing around 345kV yard and south side of 115/69kV yard
IIB	<ol style="list-style-type: none"> 1. Complete all remaining construction within substation yard
IIC	<ol style="list-style-type: none"> 1. Construct stormwater basin and install water, sewer and drainage along driveway. 2. Stone yard and pave driveway.

4.0 Storm Water Management Controls

4.1 Potential Impacts for Storm Water Contamination

Substation construction typically requires the following general operations that have the potential for erosion and sedimentation due to storm water flows.

Tree Clearing. Removal of vegetation can expose soils to erosion during wet weather. Ruts caused by vehicles can create paths for concentrated water flows.

Construction Site Entrance. Vehicles leaving the site can track soil onto public roadways.

Grading Operations. Exposed soils have the potential for erosion and discharge of sediment to off-site areas.

Foundation Construction. Excavating for foundations and ductlines create soil stockpiles with the potential for erosion. Concrete delivery trucks typically wash out their chutes on site after discharging their load. Deep foundations may require de-watering.

Construction Vehicles. Refueling of vehicles may spill or drip gasoline and diesel fuel onto the ground. On-site maintenance of excavating equipment may drip hydraulic oil, lubricants and antifreeze onto the ground.

Fugitive Dust. Dust generated by construction vehicles can be deposited in wetlands and waterways.

4.2 Temporary and Permanent Erosion Control Practices

During the construction phase, the following temporary erosion control measures will be implemented.

EC-1 Sediment Barrier. Staked haybales will be used to collect sediment at the perimeter of the construction area. Type I is a single row of haybales for general use and Type II is a double row to be used along Wetland Series 100.

EC-2 Construction Entrance Pad. A stone pad will be installed for vehicles to track soil prior to driving on the paved access driveway.. In addition the driveway will be swept on an as needed basis.

EC-3 Swamp Mats. Timber swamp mats will be used as necessary when working in wetland areas to minimize disturbance of the vegetation layer.

EC-4 Sediment Trap. A sediment trap will be constructed to collect runoff from the proposed yard during initial construction because the area will be exposed is too large to be controlled by sediment barriers alone.

EC-5 Check Dams. Stone or haybale check dams will be used as needed to control channel flows and collect sediment during earth work.

EC-6 Slope & Swale Stabilization. Erosion control mats will be used on permanent swales and slopes to stabilize earth and promote strong vegetation growth.

EC-7 Dust Control. Watering of the construction area will be performed on an as needed basis to control dust.

EC-8 Dewatering Sump. Temporary sumps will be used to filter groundwater that may need to be de-watered during deep foundation construction

EC-9 Catch Basin Sediment Traps. Catch basins will be fitted with fabric traps to minimize sediment from entering the new drainage system.

EC-10 Concrete Waste Sump. A sump will be used to collect waste concrete from concrete delivery trucks washing out their chutes.

Table 2 summarizes the various erosion control best management practices (BMP) that will be employed during each phase of the project. Details of the temporary BMP's are provided in Appendix B. The erosion control plans provided in Appendix C show the locations of the BMP's.

The site design includes the following features to control erosion upon completion of construction.

1. Deep Sump Catch Basins. These are installed along the access driveway to collect sediments that may be deposited on the pavement.
2. Rip Rap Outlet Aprons. Outlets from the cross culvert, the swale leading toward wetland series 100 and the stormwater basin overflow weir is protected from erosion with rip rap aprons.

5.0 Spill Prevention

5.1 Management of Spills and Releases

Should a non-storm water spill occur, the National Grid Environmental Engineer identified in Attachment A must be notified to ensure proper

TABLE 2
WACHUSETT SUBSTATION
EROSION CONTROL BMP'S

PHASE	MAJOR TASKS	APPROX.	
		DURATION	EROSIONS CONTROL BMP'S
IA	1 Brush hog area for sediment barriers	2 Weeks	Install haybales to prevent travel thru wetlands
	2 Tree Clearing		Use swamp mats as required
	3 Chip trees and remove		Install haybales at chipping location
IB	1 Grade portion of yard to rough grade elevation	2 Months	Install haybales & build lower sediment trap
	2 Permanently Stabilize Slopes on East side		Stabilize slopes and swales with erosion control mat
	3 Install permanent fencing on west side of yard		Install check dams in swales Mulch temporary slopes leading to sediment trap
IC	1 Install foundations for 345 kV "A"-Frame	4 Months	Monitor haybales
	2 Install foundations for 345 kV GIS building		Clean sediment traps and check dams as required
	3 Install 345 kV "A"-Frame structure		Construct concrete waste sump
	4 Install 345 kV GIS building		Water for dust control as required
	5 Install foundations for permanent 345 Kv transmission structures		Sweep driveway as required
	6 Install permanent 345 kV transmission structures relocate lines 314 and 343		Construct de-watering sumps as required
	7 Remove existing 345 kV transmission structures no. 119, 119A, 203 and 204		Use swamp mats at transmission structures as required and install haybales around structure locations
ID	1 Install temporary 115 Kv foundations and structures Relocate line O141 and P142	1 Month	Install haybales around structure locations as required
	2 Install foundations for 345 kV GIS building		Use concrete waste sump
	3 Install 345 kV GIS building and control house		

TABLE 2
WACHUSETT SUBSTATION
EROSION CONTROL BMP'S

PHASE	MAJOR TASKS	APPROX. DURATION	EROSIONS CONTROL BMP'S
IIA	<ol style="list-style-type: none"> 1 Build retaining wall 2 Complete grading in middle of main yard to rough grade elevation 3 Extend south portion of existing yard 4 Permanently stabilize slopes, swales, drainage 5 Complete permanent fencing around yards 	2 Months	<p>Monitor haybales and check dams</p> <p>Re-install check dams in swales as required</p> <p>Install riprap aprons at swale and culvert outlets</p>
IIB	<ol style="list-style-type: none"> 1 Complete all remaining construction in substation 	12 Months	<p>Monitor haybales and check dams</p> <p>Re-install check dams in swales as required</p> <p>Use concrete waste sump</p> <p>Water for dust control as required</p> <p>Sweep driveway as required</p>
IIC	<ol style="list-style-type: none"> 1 Construct stormwater basin and install water, sewer and drainage along driveway 2 Stone yard and pave driveway 	1 Month	<p>Install haybales around basin construction</p> <p>Monitor haybales and check dams</p> <p>Install catch basin grate traps as required</p> <p>Rip-Rap basin inlet and outlet</p> <p>Revegetate all disturbed areas outside fence</p> <p>Properly dispose of concrete waste sump</p>

reporting and clean up. The Environmental Engineer will proceed as appropriate in accordance with the following National Grid Environmental Policies:

EP No. 1	Waste Management and Recycling
EP No. 5	Release Response
EP No. 15	Reporting of Environmental Incidents

5.2 Refueling and Vehicle Lubrication

Vehicles requiring refueling or lubrication, shall be brought to a portion of the site away from environmentally sensitive areas (such as wetlands, storm drains, culverts, wells, etc.). The operator shall take precautions to ensure that drips spills or seeps do not enter the ground. The use of absorbent towels beneath the fuel tank is recommended.

6.0 Inspections

6.1 General

Maintenance of existing and proposed best management practices (BMP's) to address storm water management facilities during construction is an on-going process. The owner's appointed representative, will be responsible for performing regular inspections of erosion controls and ordering repairs as necessary. The inspections will observe all sources of stormwater or non-stormwater discharge as identified in the SWPPP, as well as the status of the receiving waters. The inspector should also be concerned with the condition of all implemented BMP's and how well they are controlling or filtering run-off. The inspection will also recommend whether corrective actions to established BMP's are required or whether additional BMP's are necessary to prevent storm water contamination based on field conditions.

6.2 Inspection Frequency

National Grid's authorized representative will conduct inspections of this project on a regular basis to assure compliance with this SWPPP. Inspections must be performed by qualified personnel once every seven (7) days, or once every fourteen (14) days and following significant storm events, in accordance with the CGP. This is an optional choice provided in the CGP. For this specific project, the Owner/Operator will inspect once every seven days. This eliminates the need to conduct inspections after every significant storm.

Inspections can be done once a month or temporarily waived if the ground is frozen for extended periods of time, no disturbance is taking place and

the dates are recorded in the SWPPP. Inspections must resume within a month before thawing conditions are expected. If a portion of the site/project area is permanently stabilized, inspections can cease in that area as long as the condition has been documented by amending the SWPPP.

6.3 Inspection Reporting

The inspections must be documented on the inspection form provided in Appendix D of the SWPPP and completed forms will be provided to the on-site supervisor and maintained at the Owner's office during the entire construction.. Each inspection report will summarize major observations relating to the implementation of the SWPPP, including BMP's, that must be maintained or that failed to operate as expected, as well as areas where additional BMP's are necessary to prevent storm water contamination based on field conditions.

If a regular inspection observes that there is an area of construction that poses a threat to wetland resource areas or water quality, or does not comply with what is outlined in the SWPPP, it will be addressed and proper corrective measures shall be implemented as soon as possible.

7.0 Compliance with Federal, State and Local Regulations

7.1 Endangered Species

According to the Natural Heritage & Endangered Species Program Atlas (under the Massachusetts Division of Fisheries and Wildlife), the project site is not within or in the vicinity of any Priority Habitat of Rare Species or Estimated Habitats of Rare Wildlife. Due to the fact that a portion of the site is already developed, and it is not located in the target habitat areas for the bald eagle or dwarf wedge mussel as provided by US Fish and Wildlife Service, it is unlikely that the project will have any adverse impacts to federally listed species.

7.2 Historic Places

A review of the National Register of Historic Places database (www.nr.nps.gov/nrloc1.htm) was conducted and there are no historic properties that will be affected by the construction.

7.3 Other Permits and Regulations

The following permits related to sedimentation and erosion controls are required for the project

1. Order of Conditions from the Town of West Boylston Conservation Commission (that also serves as approval under the Army Corps of Engineers Programmatic General Permit and as the Department of Environmental Protection's water quality certificate)
2. Request for Watershed Determination of Applicability from the Department of Conservation and Recreation
3. Stormwater General Permit Notice of Intent from the Department of Environmental Protection

Any conditions imposed on the project by the above permits will be adhered to in addition to this SWPPP, or if needed the SWPPP will be amended as appropriate to include specific permit conditions.

8.0 Plan Amendments

If construction activities or design modifications are made to the site plan that could impact storm water, this SWPPP will be amended appropriately. The amended SWPPP will have a description of the new activities that contribute to the increased pollutant loading and the planned source control activities. Amendments will be added in Attachment F.

9.0 Certifications

Owner's Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Organization
Name
Title
Date

Contractor's Certification

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Organization

Name

Title

Date

ATTACHMENT A – CONSTRUCTION CONTACT LIST

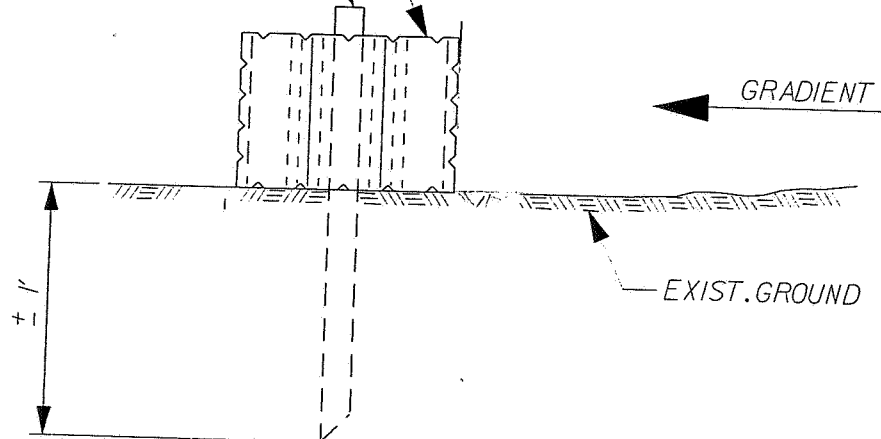
SWPPP EMERGENCY CONTACT LIST

Name	Title	Company	Contact Number
TBD	Owner's Site Supervisor	National Grid 55 Bearfoot Road Northborough, MA 01532	
TBD	Contractor's Site Supervisor		
Dan McIntyre	Project Engineer	National Grid 55 Bearfoot Road Northborough, MA 01532	508-421-7674 office 508-868-5424 cell
Jeff Bridge	Wetlands Consultant	Mason Associates 219 East Main Street Milford, MA 01757	508-422-9495
Dawn Travalini	Environmental Engineer (Spill Response only)	National Grid 55 Bearfoot Road Northborough, MA 01532	508-860-6481 office 508-922-3153 cell
TBD	SWPPP Inspector		

ATTACHMENT B – EROSION CONTROL BMP'S

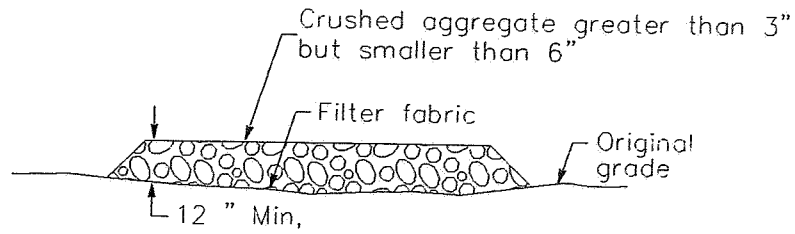
TWINE OR NYLON BOUND
BALES OF STRAW

1"x1" HARDWOOD
STAKES
(2 PER BALE)

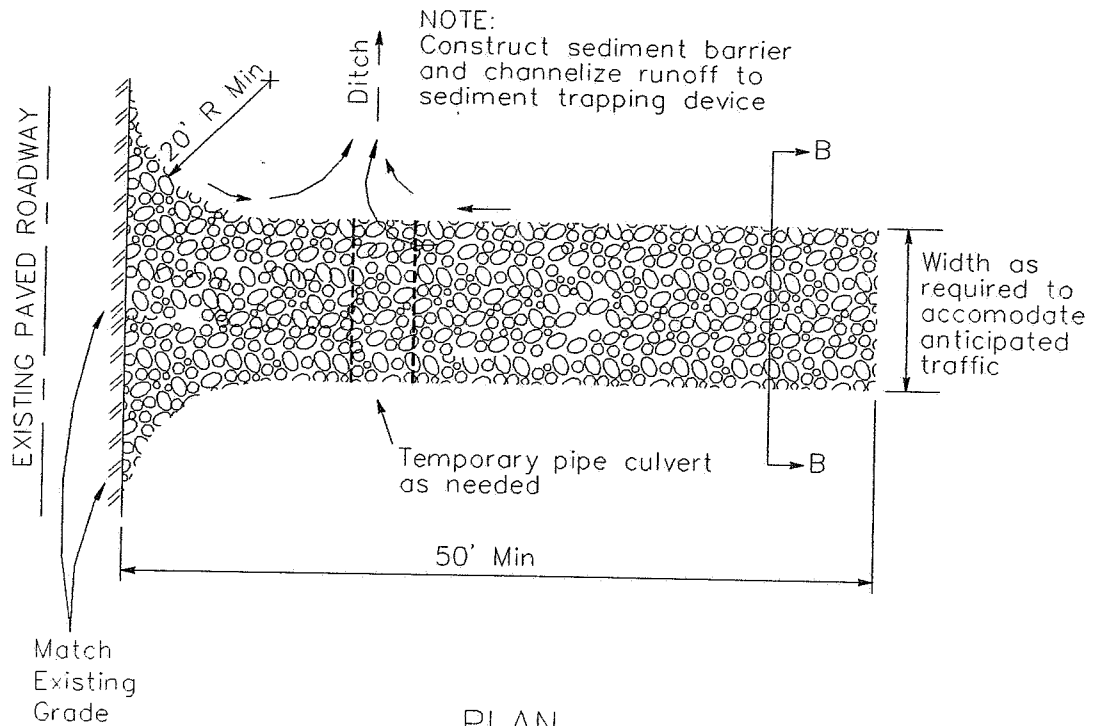


NOTES:

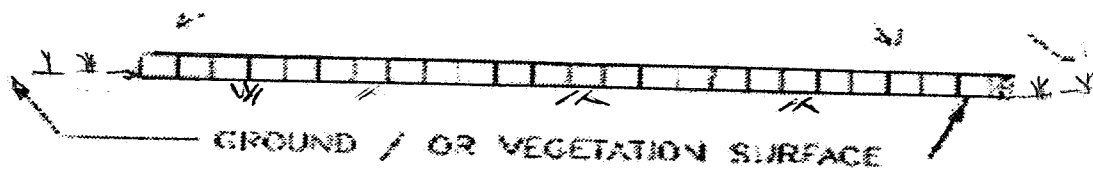
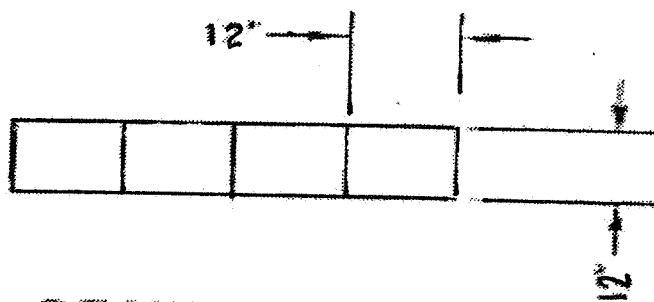
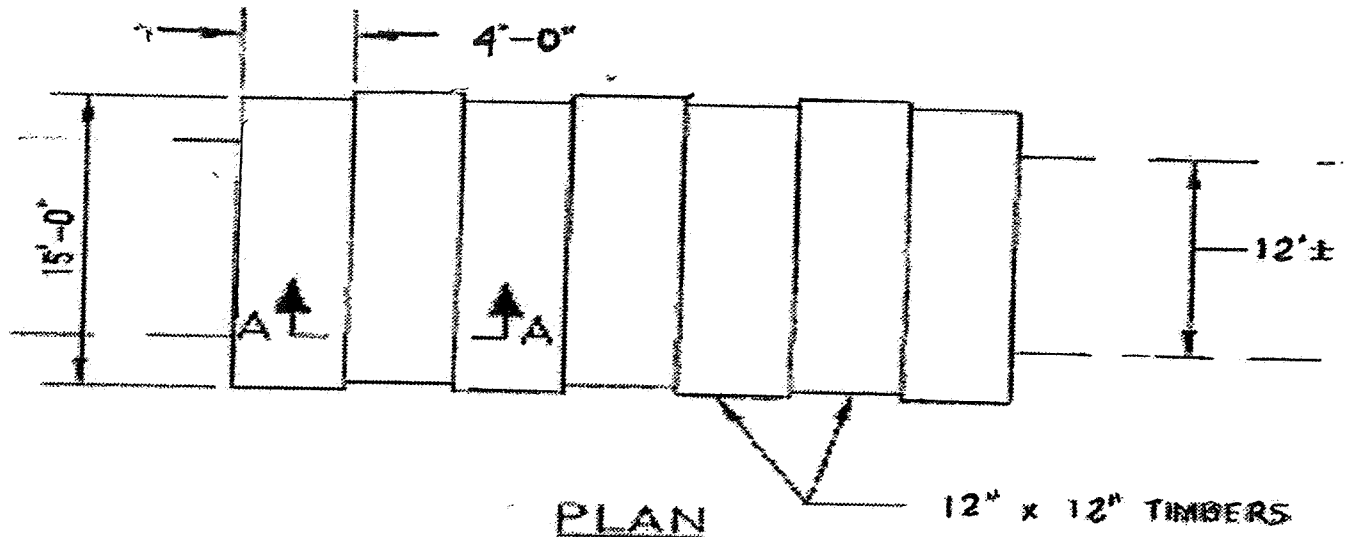
1. TYPE I TO BE SINGLE LINE OF STAKED HAYBALES.
2. TYPE II TO BE DOUBLE ROW OF STAKED HAYBALES.
3. HAYBALES TO BE STAKED FIRMLY INTO EXISTING VEGETATION.
WHEN PLACED ON BARE EARTH, SOIL SHALL BE COMPACTED ON
UPGRADIENT SIDE OF BALES TO A DEPTH OF ABOUT 4 INCHES



SECTION B-B
NTS

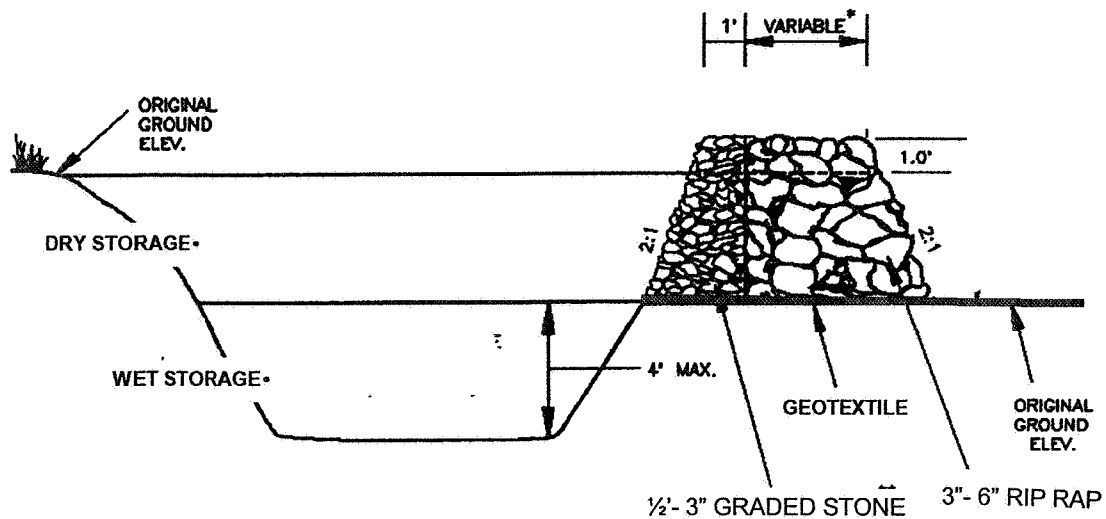


PLAN
NTS

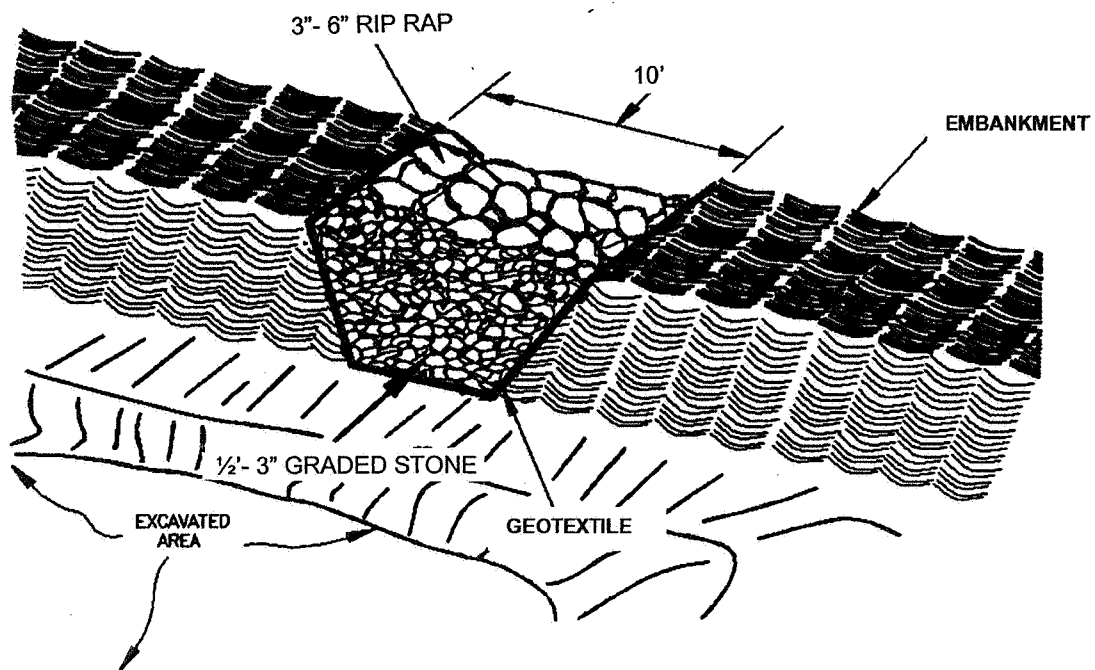


NOTE:

1. USE MATS AS NECESSARY WHEN WORKING IN WETLAND AREAS TO MINIMIZE SOIL DISTURBANCE.



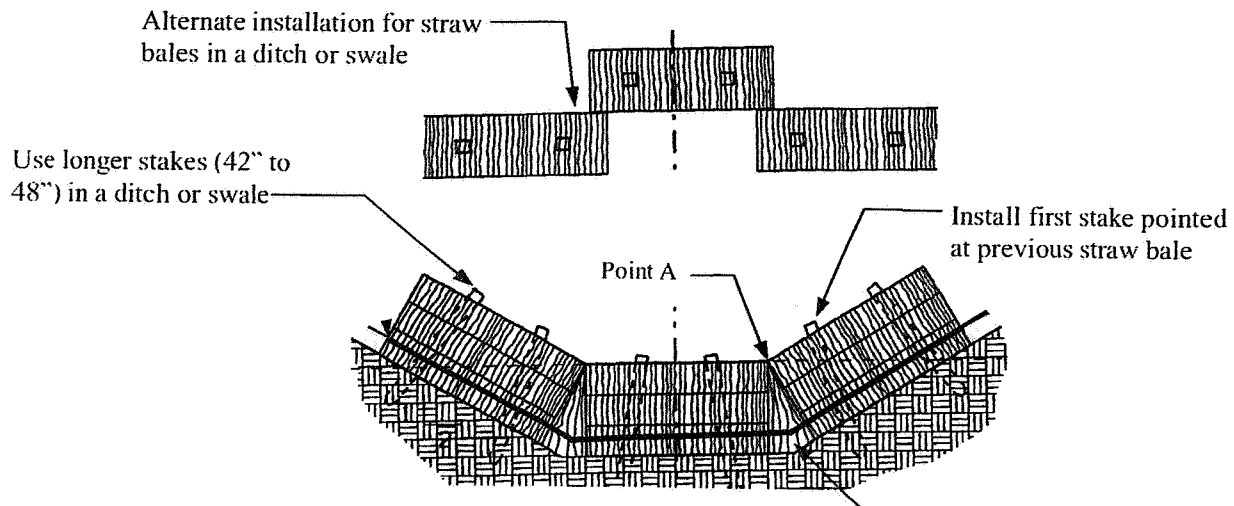
Cross Section of Outlet



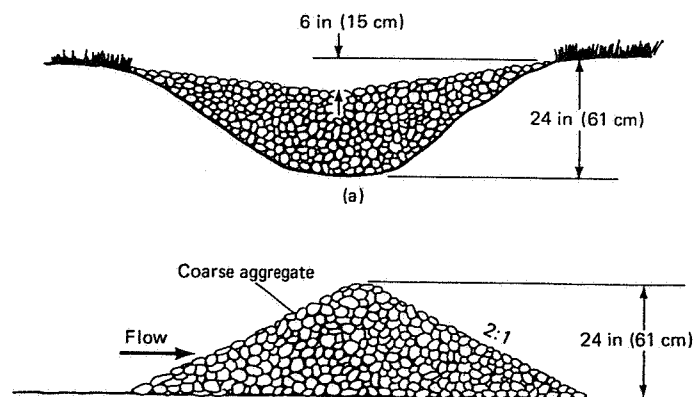
Outlet (Perspective View)

NOTE:

1. SEE PLAN FOR SIZE AND SHAPE OF BASIN
2. IF REQUIRED, USE SILT FENCING AS BARRIER IN BASIN TO PREVENT SHORT CIRCUITING TO OUTLET AND EXTEND SETTLING TIME.



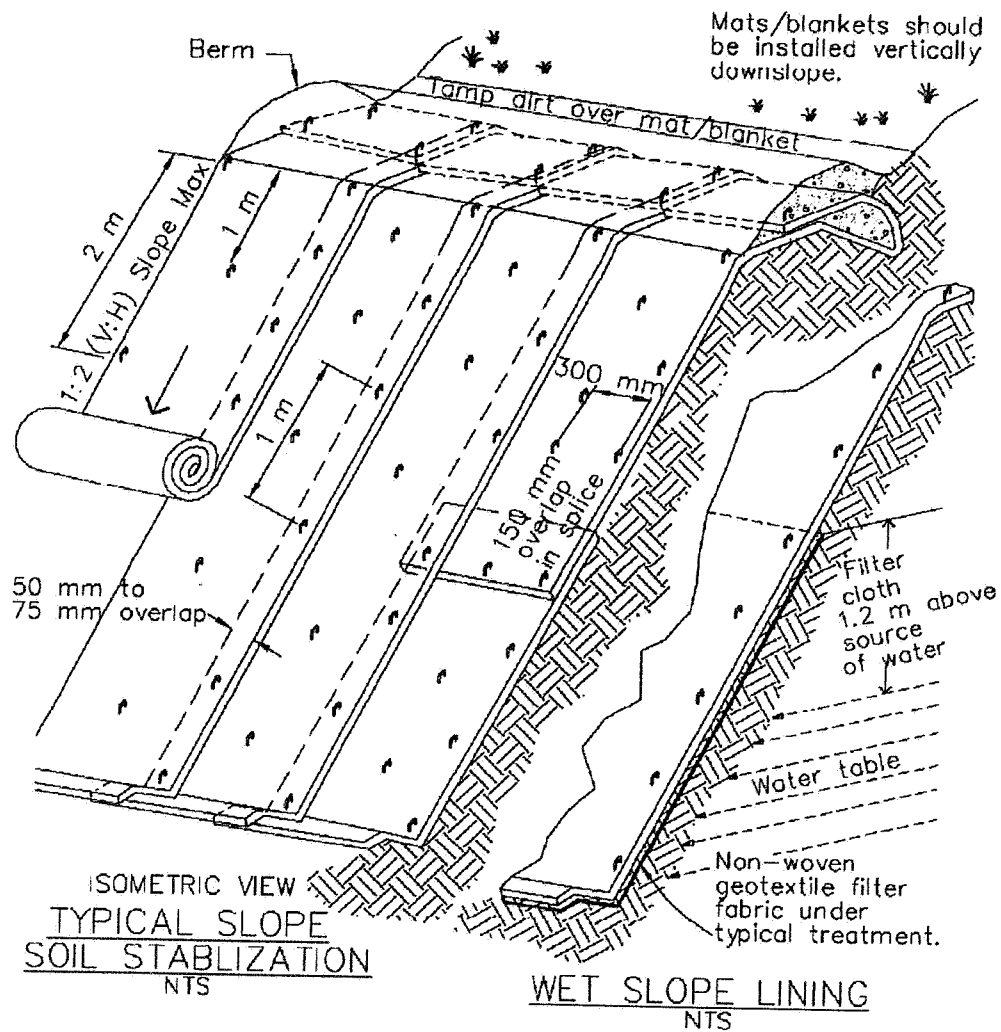
HAYBALE CHECK DAM



STONE CHECK DAM

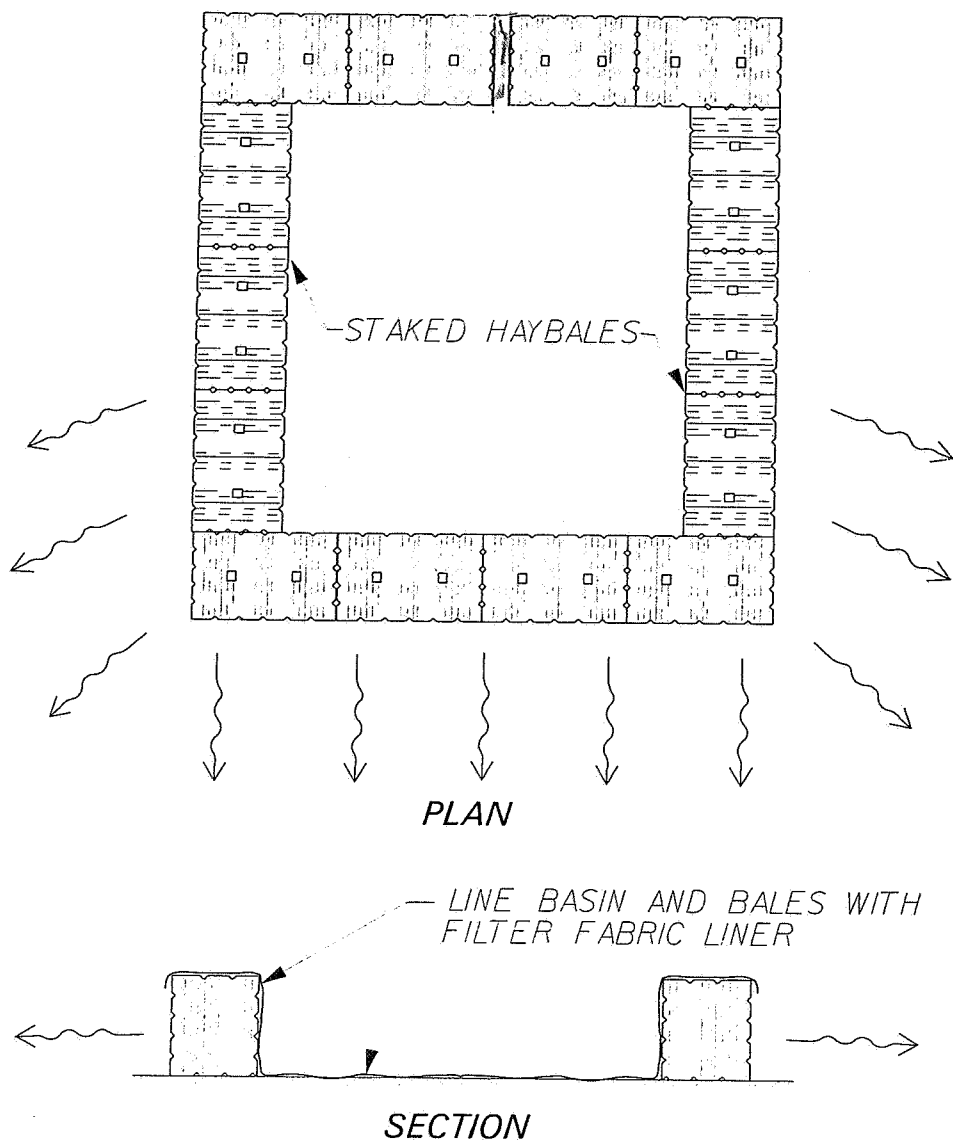
NOTE:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.



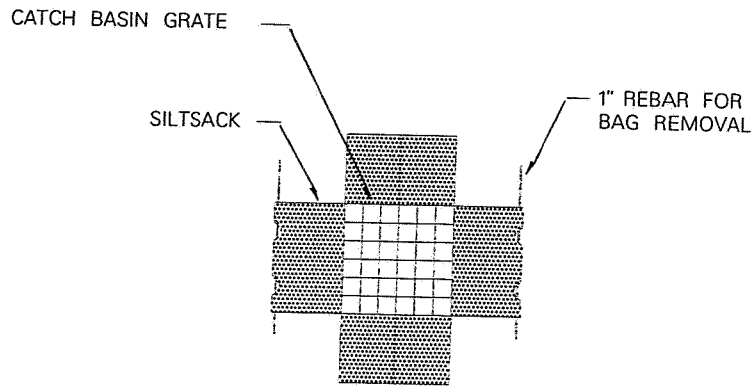
NOTE:

1. SLOPE SHALL BE FREE OF ROCKS, CLODS, STICKS, ETC. AND GRADED UNIFORMLY SO MAT HAS GOOD SOIL CONTACT.
2. SIMILAR MATTING TO BE USED IN SWALES.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

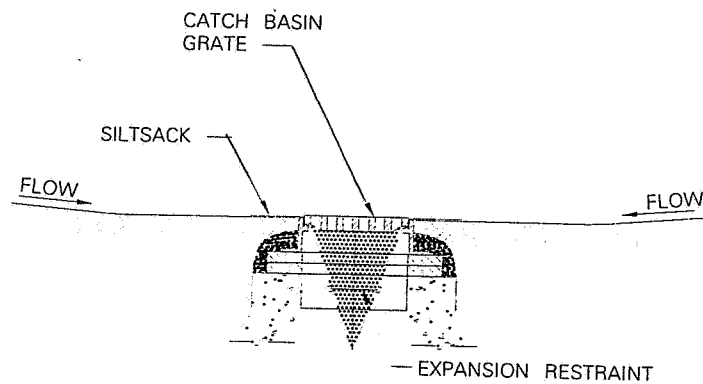


NOTE:

1. SUMPS TO BE LOCATED AS REQUIRED FOR EXCAVATION DE-WATERING BUT SHOULD BE KEPT AS FAR FROM WETLAND AREAS AS PRACTICAL.
2. SUMPS TO BE CLEANED AND REMOVED AS SOON AS DE-WATERING COMPLETE.



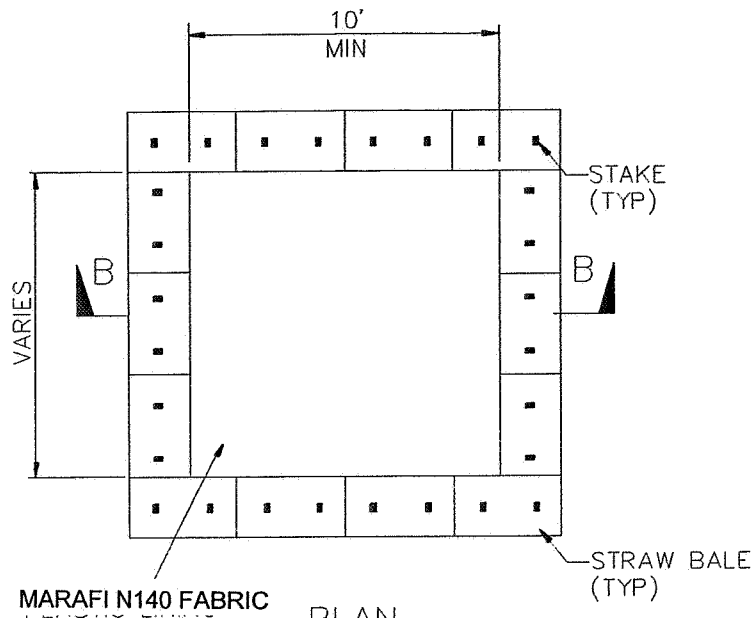
PLAN VIEW



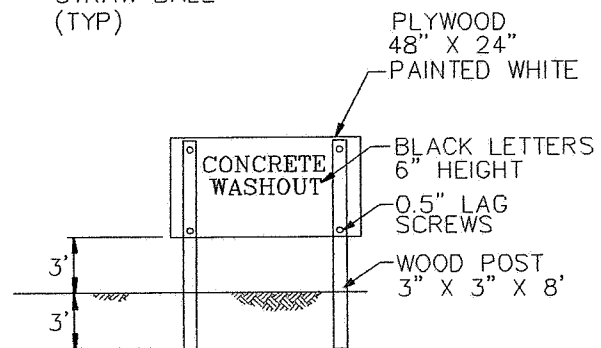
SECTION VIEW

NOTE:

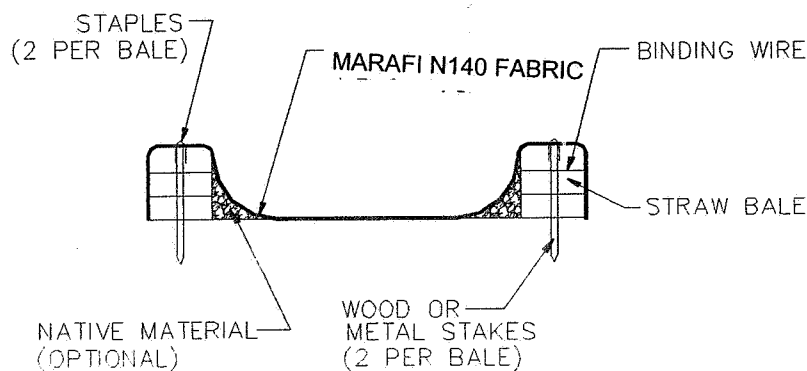
1. INSTALL TRAPS AFTER INSTALLATION OF CATCH BASINS AND MAINTAIN UNTIL BINDER COURSE IS COMPLETE.
2. REPLACE TRAP AS NEEDED.



PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"
WITH STRAW BALES



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

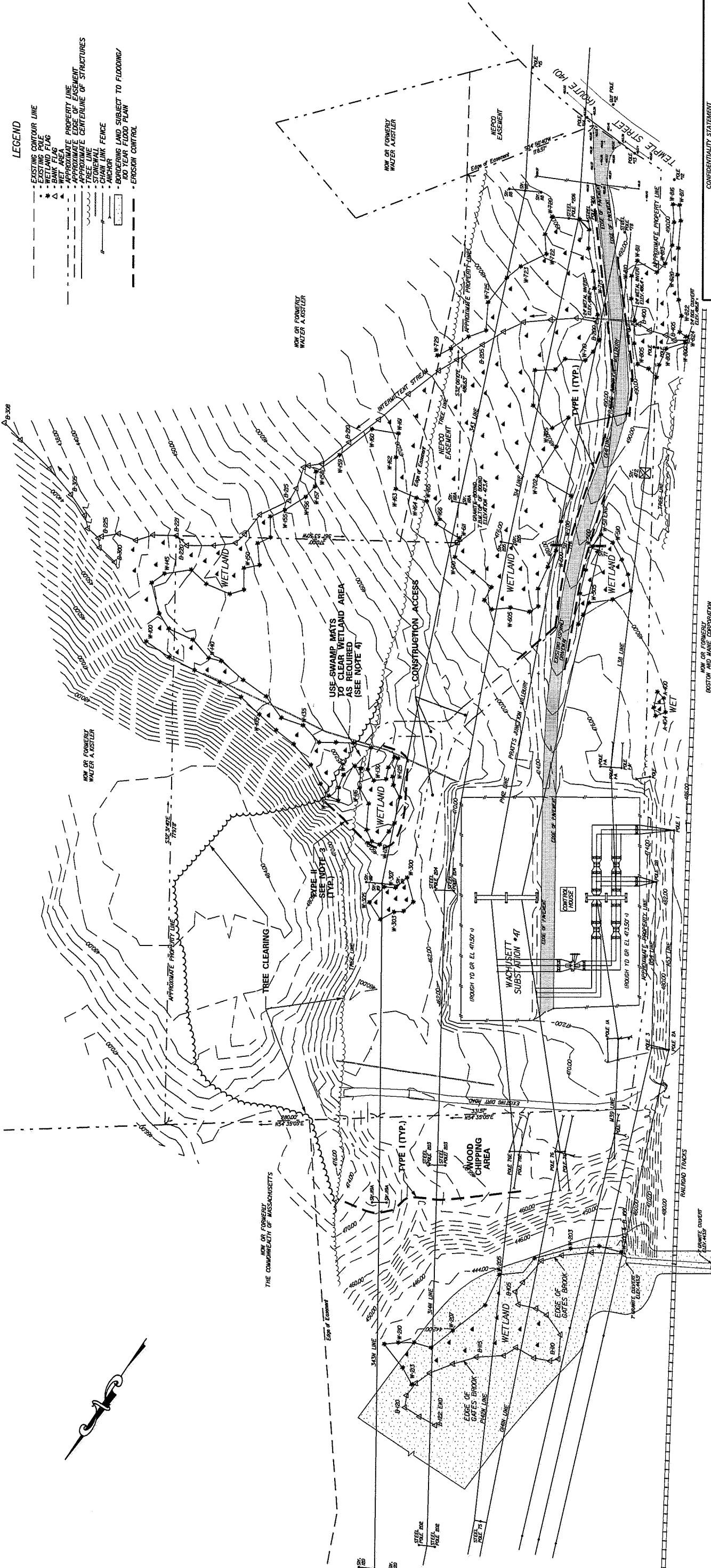


SECTION B-B
NOT TO SCALE

1. SUMPS TO BE LOCATED IN YARD BUT SHOULD BE KEPT AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
2. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK..

ATTACHMENT C – PROJECT PLANS

Erosion Control Plan Stage 1
Erosion Control Plan Stage 2
Erosion Control Plan Stage 3



- LEGEND**
- - - EXISTING CONTOUR LINE
 - - - EXISTING FLAG
 - - - WETLAND FLAG
 - - - BANK FLAG
 - - - APPROXIMATE PROPERTY LINE
 - - - APPROXIMATE EASEMENT
 - - - APPROXIMATE CENTERLINE OF STRUCTURES
 - - - STEEL PILE
 - - - CHAIN LINK FENCE
 - - - BORDERING LAND SUBJECT TO FLOODING/100 YEAR FLOOD PLAN
 - - - EROSION CONTROL

EROSION CONTROL NOTES

1. NO TREES TO BE REMOVED OUTSIDE WORK AREA WITHOUT PERMISSION OF THE ENGINEER.
2. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED AS WORK PROGRESSES.
3. DENSE GROWTH MAY NEED TO BE CLEARED WITH BRUSH HOG PRIOR TO INSTALLATION OF HABITATS. IF HABITATS CAN BE STAKED FROM EXISTING VEGETATION, THEY DO NOT NEED TO BE THINNED IN.
4. DURING CLEARING OF TREES IN WETLAND SERIES 100 AND REPLACEMENT OF STRUCTURES, INCLUDING THE SWAMP MATS, FELLED TREES IN WETLAND SERIES 100 SHALL BE LEFT IN PLACE OR LIFTED OUT. STUMPS TO BE LEFT IN PLACE.
5. EXACT NUMBER AND LOCATION OF DEWATERING Sumps TO BE DETERMINED BY FIELD CONDITIONS. Sumps SHALL BE LOCATED AS FAR AS PRACTICAL FROM RESOURCE AREAS. Sumps SHALL BE CLEANED AND REMOVED UPON COMPLETION OF DEWATERING.
6. DUST SHALL BE CONTROLLED BY WATER SPRINKLING ON AN AS-NEEDED BASIS.
7. CONTRACTOR TO TAKE CARE TO MINIMIZE TRACKING OF SOIL ONTO TEMPLE STREET. DRIVEWAY TO BE SWEPT AS NEEDED.
8. CONCRETE WASTE SUMP TO BE LOCATED WITHIN YARD IN A CONVENIENT AREA AWAY FROM PERMANENT AND TEMPORARY CONSTRUCTION. Sumps SHALL BE FILLED WITH FABRIC TRAPS TO MINIMIZE SEDIMENT FROM ENTERING THE NEW DRAINAGE SYSTEM.
9. ALL DISTURBED AREAS TO BE REVEGETATED AS SOON AS PRACTICAL. REVEGETATION IS NOT PRACTICAL DUE TO WEATHER CONDITIONS, MULCH SHALL BE USED.

EROSION CONTROL BEST MANAGEMENT PRACTICES

- | BMP | DESCRIPTION |
|-------|--|
| EC-1 | Sediment Barrier: Staked haybales will be used to collect sediment at the perimeter of the work area. Haybales will be used along wetland Series 100. Type II is a double row to be used along wetland Series 100. |
| EC-2 | Construction Entrance Pad: A stone pad will be installed for vehicles to track soil onto the existing paved access driveway. In addition the driveway will be swept on an as needed basis. |
| EC-3 | Swamp Mats: Timber swamp mats will be used as necessary when working in wetland areas to minimize disturbance of the vegetation layer. |
| EC-4 | Sediment Trap: A sediment trap will be constructed to collect runoff from the proposed yard during initial construction because the area will be exposed to large flows and will be controlled by sediment barriers alone. |
| EC-5 | Check Dams: Stone or haybale check dams will be used as needed to control channel flows and collect sediment during earth work. |
| EC-6 | Slope & Grade Stabilization: Erosion control mats will be used on permanent swales and slopes to stabilize earth and promote strong vegetation growth. |
| EC-7 | Dust Control: Watering of the construction area will be performed on an as needed basis to control dust. |
| EC-8 | Dewatering Sump: Temporary sumps will be used to filter groundwater that may need to be dewatered during deep foundation construction. |
| EC-9 | Catch Basin: Sediment Traps: Catch basins will be filled with fabric traps to minimize sediment from entering the new drainage system. |
| EC-10 | Concrete Waste Sump: A sump will be used to collect waste concrete from concrete gateway tracks washing out their chutes. |

EROSIONS CONTROL BMP'S

- | PHASE | MAJOR TASKS |
|-------|--|
| 1A | 1. Brush hog area for sediment barriers
2. Tree clearing
3. Chip trees and remove
Install haybales at chipping location |

CONFIDENTIALITY STATEMENT
This document contains confidential and proprietary information of the NATIONAL GRID USA company. It is to be used by authorized contractors of those companies solely in connection with the performance of the contract for which it was prepared. It is not to be distributed to third parties, or its reproduction without prior express written authorization of a NATIONAL GRID USA company is strictly prohibited.



NATIONAL GRID USA Service Company, Inc.
PART OF NATIONAL GRID USA
WESTBORO, MA

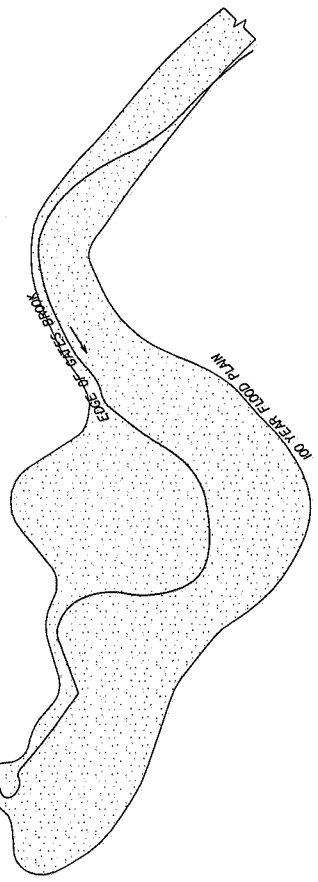
Site Development Plan For
New England Power Company

West Boylston, Massachusetts
WACHUSETT SUBSTATION NO. 47
Assessors Maps 149, 152 - Lots 43, 44

EROSION CONTROL PLAN
STAGE 1

SCALE: 1"=60'-0"
DATE: 12/20/03

Prepared By:
NATIONAL GRID USA
Service Company, Inc.
55 Beaufort Road
Northboro, MA 01532



PHASE	MAJOR TASKS	EROSIONS CONTROL	BMP'S
IB	1 Gravel portion of yard to rough grade elevation		
	2 Permanently Stabilize Slopes on East side of yard	Install haybales & build lower sediment trap	
	3 Install permanent fencing on west side of yard	Stabilize slopes and swales with erosion control mat Install check dams in swales Match temporary slopes leading to sediment trap	
IC	1 Install foundations for 345 Kv "A-Frame	Monitor haybales	
	2 Install foundations for 345 Kv GIS building	Clean sediment traps and check dams as required	
	3 Install foundations for 345 Kv GIS building	Install sediment traps and check dams as required	
	4 Install 345 Kv GIS building	Water for dust control as required	
	5 Install foundations for permanent 345 Kv transmission structures	Sweep driveway as required	
	6 Upgrade existing 345 Kv transmission structures	Construct de-wintering ramps as required	
	7 Remove existing 345 Kv transmission structures see 103, 109, 203 and 204	Use concrete waste pits as transmission structures as required and install haybales around structure locations	
ID	1 Relocate temporary 115 Kv foundations and structures	Install haybales around structure locations as required	
	2 Install foundations for 345 Kv GIS building	Use concrete waste dump	
	3 Install 345 Kv GIS building and control house		

NOTE: SEE SHEET 1 FOR GENERAL NOTES AND BMP DESCRIPTIONS

**NOW OR FORMERLY
BOSTON AND MAINE CORPORATION**

CONFIDENTIALITY STATEMENT

NATIONAL GRID USA Service Company, Inc.
PART OF NATIONAL GRID USA
WESTBORO, MA

Site Development Plan For
New England Power Company

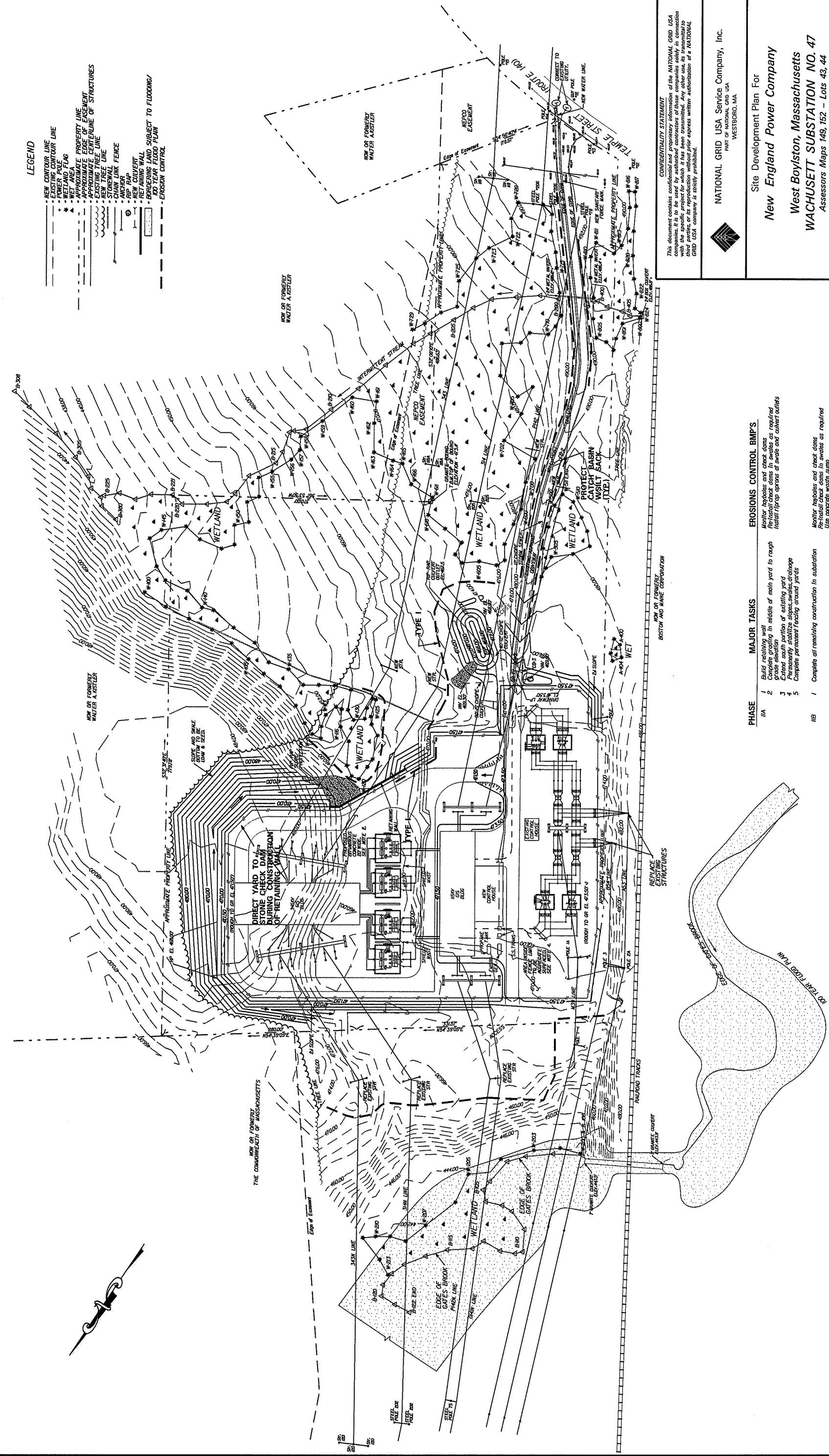
West Boylston, Massachusetts
WACHUSETT SUBSTATION NO. 47
Assessors Maps 149, 152 – Lots 43, 44

EROSION CONTROL PLAN STAGE 2

SCALE: 1" = 60'-0"

Prepared By:
NATIONAL GRID USA
Service Company, Inc.
55 Bearfoot Road
Northboro, MA 01532

Sheet 2 of 3



- LEGEND**
- NEW CONTOUR LINE
 - EXISTING CONTOUR LINE
 - WETLAND
 - WETLAND BUFFER
 - WETLAND FENCE
 - APPROXIMATE PROPERTY LINE
 - APPROXIMATE EDGE OF EASEMENT
 - APPROXIMATE TREE LINE
 - NEW TREE LINE
 - EXISTING TREE LINE
 - STONEWALL
 - CHAIN LINK FENCE
 - ANCHOR
 - NEW CULVERT
 - RETAINING WALL
 - PROPOSED 100 YEAR FLOOD PLAN
 - EROSION CONTROL

PHASE	MAJOR TASKS	EROSIONS CONTROL BMP'S
IIA	1. Build retaining wall 2. Complete grading in middle of main yard to rough grade elevation 3. Extend south portion of existing yard 4. Permanently stabilize slopes, swales, drainage 5. Complete permanent facing around yards	Monitor hedges and check dams Re-install check dams in swales as required Install riprap across all swale and culvert outlets
IIIB	1. Complete all remaining construction in subdivision	Monitor hedges and check dams Re-install check dams in swales as required Use concrete waste sump Water for dust control as required Sweep driveway as required
IIIC	1. Construct stormwater basin and install water, sewer and drainage along driveway 2. Slope yard and pave driveway	Monitor hedges and check dams Install catch basin grate traps as required Re-install check dams in swales as required Regrade all disturbed areas outside fence Properly dispose of concrete waste sump

NOTE: SEE SHEET 1 FOR GENERAL NOTES AND BMP DESCRIPTIONS

CONFIDENTIALITY STATEMENT
This document contains confidential and proprietary information of the NATIONAL GRID USA companies. It is to be used by authorized contractors of these companies solely in connection with the project for which it was prepared. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission of a NATIONAL GRID USA company. A company is strictly prohibited.



NATIONAL GRID USA Service Company, Inc.
PART OF NATIONAL GRID USA
WESTBORO, MA

Site Development Plan For
New England Power Company
West Boylston, Massachusetts
WACHUSETT SUBSTATION NO. 47
Assessors Maps 149, 152 - Lots 43, 44

EROSION CONTROL PLAN
STAGE 3

SCALE: 1" = 60'-0"
DATE: 12/20/03

Prepared By:
NATIONAL GRID USA
Service Company, Inc.
55 Beardsford Road
Northboro, MA 01532

ATTACHMENT D – SAMPLE INSPECTION REPORT

National Grid
Storm Water and Wetlands Environmental Compliance
Site Inspection / Monitoring Report

Project Name: _____ **City / Town:** _____

Date: _____ **Time:** _____

Current Weather Conditions:

Precipitation Since Last Inspection (Date, Est. Duration and Est. Amount from Each Storm):

Activities/Structures/Locations Inspected:

Locations of Any Discharges of Sediment from the Site:

Compliance with SWPPP Storm Water Controls, Order of Conditions or Other Environmental Requirements? (Explain if “no” for any feature inspected):

Additional BMPs or Other Corrective Action Needed and, if so, Where?

Compliance with Previous Observations:

Miscellaneous(e.g., dumping?):

Name: _____

Title/Company: _____

ATTACHMENT E – CONSTRUCTION GENERAL PERMIT

TO BE ADDED AT TIME OF PLAN SIGNATURES

ATTACHMENT F – AMENDMENTS TO THE SWPPP
